

Year 2 Maths Activities - Week Beginning 29.6.20.

Dear Parents and Carers,

We are going to continue with our revision. The first two lessons are finishing off our work about Shape and the following three lessons are about Position and Direction. I have taken out the guidance notes about Shape as you have had them before, but don't worry if you still need to look at them, they are saved in the archive folder on the website. I have not replaced the Shape notes with notes about Position and Direction because the 'notes and guidance' for each activity is pretty good and self-explanatory. I have included a 'Position and Direction Knowledge Organiser' with the other resources and hopefully this will help with anything you are unsure of. As with Shape, Position and Direction is mostly about learning new vocabulary and applying it to different problems.

A Small Top Tip though!!!! Children should learn their left and right. When I was little I remember my teacher making little strips of cardboard with 'L' on one and 'R' on the other. These were fixed around our wrists every morning on entry to school using either sticky tape or staples (I do not know how on Earth she found the time each day with 30 of us!!!!). You were only allowed to stop wearing them when you knew them!!!! Now, I'm not suggesting you do that, but can you find a way to help them to remember? Maybe teach them to put their hands out in front with backs of hands facing themselves and their left hand makes an 'L' shape when they put their thumb out. Or tell them which hand is the one they write with. Or tie a piece of coloured string around their right wrist.

I have decided not to divide the sessions up into 3 levels of difficulty, as this topic is a bit more straight-forward than some of the others. However, I have tried to find some extra challenges for those children Working At Greater Depth.

Activity 1

Objective: Sort 3D Shapes.

Notes and Guidance

Children need to be able to recognise and name 3D shapes including cube, sphere, cuboid, cone, cylinder, triangular prism and square-based pyramid using a range of different orientations and real life objects. Children need to be able to count the number of sides and vertices on 3D shapes including cube, sphere, cuboid, cone, cylinder, triangular prism and square-based pyramid. In this small step, children should have access to a range of real life objects to sort and compare.

Mathematical Talk

How have you sorted your shapes?

How do you know you have sorted your shapes correctly?

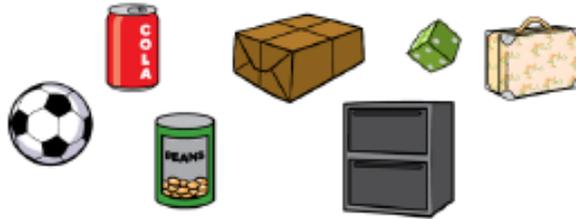
Which method have you used to sort your shapes?

Can you sort your shapes in a different way?

Can you group your solids by shape, type of faces and size?

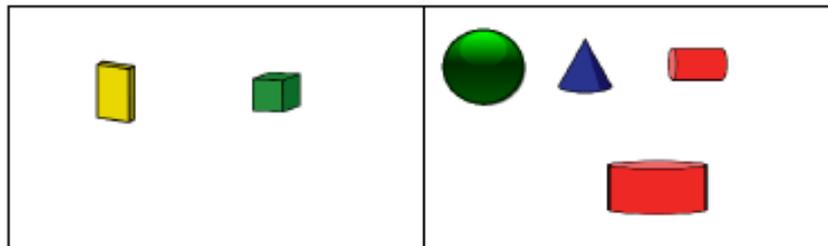
Activities

- 1 Group the following real life objects by their 3D shape name.



- 2 Sort the 3D shapes on your table. How have you grouped them? Label the groups.

- 3 How are these shapes grouped? Tell your partner.



Has your partner grouped them in a different way?

N.B. For Activity 2 (above), first make a collection of 3D shapes. You could use the Shape Nets from last week and make them up before sorting or you could find some real life objects. A football could be your sphere, a Toblerone box makes a good triangular prism, perhaps a tissue box for a cuboid or a Rubix Cube for a cube. Get creative and see what you can find!!!!

Hamish is sorting 3D shapes.
He puts a cube in the cuboid pile.

A cube is a
type of cuboid.



Answer below!!!!
(Just in case you aren't sure!)

Do you agree? Why?

Hamish is sorting 3D shapes.
He puts a cube in the cuboid pile.

A cube is a
type of cuboid.



Do you agree? Why?

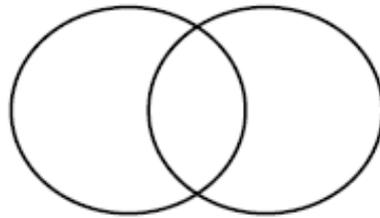
Answer: Yes it is.

They both have 6
faces.

They both have 12
edges.

A cube is a
particular kind of
cuboid where all
faces are squares.

Can you arrange the shapes in your table
into a Venn Diagram?



What titles could you give it?

N.B. This (left) is a
Venn Diagram. I
have saved a Venn
Diagram template
along with the
other resources if
you wish to use it.

Hamza has sorted some 3D shapes.
He has placed a cube and a cuboid in the
same group.

How could he have sorted his shapes?

You could sort by;

- has flat faces or surfaces / has curved faces or surfaces (shapes with both go in the crossover in the middle, such as cone and cylinder),
- has square faces / has faces that are not square (shapes with both go in the crossover, e.g. cuboid, square based pyramid),
- sort by number of vertices or number of edges.

- sort by good at rolling / not good at rolling (shapes like a cylinder could go in the middle, because it would be good at rolling when placed on its curved surface, but not when placed on one of its flat faces).

The above are only suggestions. You might be able to think of other ways of sorting.

Complete the worksheet about sorting 3D shapes.

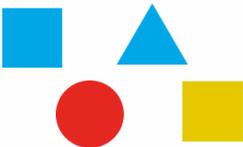
Extra Activities for Children Working at Greater Depth

Have a go at sorting 3D shapes using a Carroll diagram (template saved with other resources). A Carroll diagram is slightly harder. You need 2 titles along the top and 2 down the side. E.g.

What is a Carroll Diagram?

	blue	not blue
square		
not square		

A Carroll diagram is a way of sorting objects, numbers and shapes. It looks like a table and has different criteria for you to sort with.



Click on the shapes

Obviously in this example they are using 2D shapes. If using 3D you could use the following criteria;

- Top - 6 vertices or more / less than 6 vertices

Bottom - Has curved surface / does not have curved surface

- Top - All flat faces / not all flat faces

Bottom - has at least 1 vertex / has no vertices

- Top - 8 edges or more / less than 8 edges

Bottom - Red / Not Red

The above are only suggestions. Maybe you can think of some other ways to sort your shapes?

Notes and Guidance

Children should be familiar with the names and properties of 3D shapes at this stage. This step allows opportunities to justify choices in pattern making and reinforce shape vocabulary. Discussion around the orientation of the shape should be encouraged by making patterns with the same shape as per the example with the cones below. A wide range of examples of shapes should be used, including, Polydron, cereal boxes, different sized balls, food cans etc.

Mathematical Talk

Where can you see real life patterns with 3D shapes?

Can you explain your pattern to a partner?

Does the shape always have to be a certain way up?

Can you work out what shape would be the ___th?

Activities

- 1 Use some different coloured cubes to make a repeating pattern. Can you describe the pattern to your partner?
- 2 Make a sequence of 3D shapes with real life objects. You could use food cans, boxes, balls, or other things in your classroom. Describe the pattern.
- 3 Here is a pattern of 3D shapes:



Add a 3D shape into the sequence after the cube. If you continued the pattern, what will the 10th shape in the sequence be?

Can you make a different pattern with the same shapes?
What's the same, what's different?

N.B. It can be difficult to find lots of 3D shapes, so I have provided a sheet of pictures of 3D shapes and a sheet of coloured cubes to cut out. This is not ideal as we want children to handle real shapes if possible, however it is not always practical if you don't have the resources to do so!

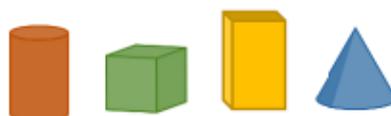
What is the same about these patterns?
What is different about these patterns?



Take a selection of 3D shapes where you have 2 different types.
What different repeating patterns could be made?



Use 4 different types of 3D shapes like the ones below.



Make a repeating pattern where there are more cones than cuboids.

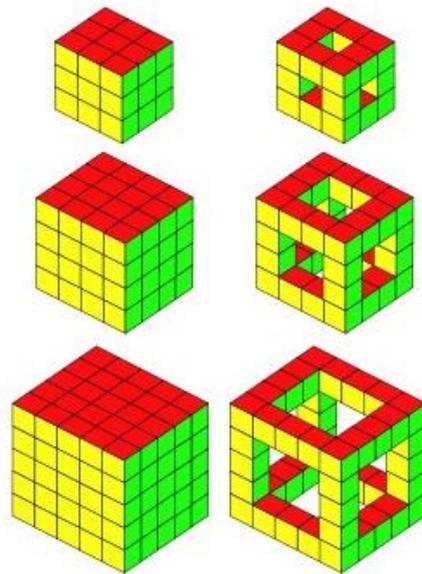
Try to make a repeating pattern where the third shape is always a cylinder.

Complete the worksheet about making patterns with 3D shapes.

Extra Activities for Children Working at Greater Depth

Holes

Age 5 to 11 ★



Here we have three solid cubes and three cubes that have holes. They're just the first three in a series that could go on and on.

I was wondering about the number of cubes used in each ...

Then I thought about the difference between those numbers.

So, for example, I found that the first cube, 3 by 3 by 3, used 27 cubes.

The same cube with holes used 20 cubes, a difference of 7.

You can call these types of cubes what you like but I called them "Solid" and "Frame".

How about exploring the numbers for the next few Solid and Frame cubes?

Do you notice any patterns?
Can you explain any of the patterns?

The solution can be found at;
<https://nrich.maths.org/6529/solution>

Activity 3

Objective: Describing Movement.

*Position
and
Direction*

Notes and Guidance

Children use language 'forwards', 'backwards', 'up', 'down', 'left' and 'right' to describe movement in a straight line.

Children will practically follow and give directions with a partner before writing directions for routes and recording routes on 2D grids. Teachers need to have discussions around the direction objects are facing in order to correctly complete left and right movements.

Mathematical Talk

How far have you/has your partner moved?
In what direction have you/has your partner moved?

What direction are we facing in at the start? Why is this important?

Can you describe the movements made by ____?

How could we record these movements?

Activities

1 Using the words forwards, backwards, up, down, left and right, give your partner some instructions to complete around the classroom/playground.

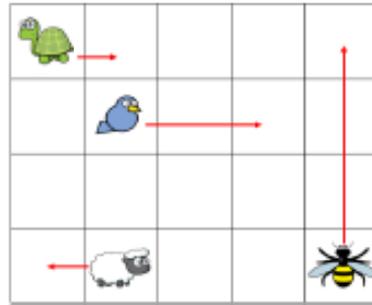
2 Complete the stem sentences to describe the movements made.

The tortoise has moved
1 square _____.

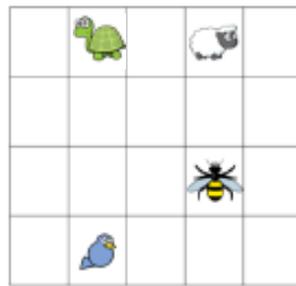
The bee has moved ____
squares _____.

The _____ has moved
1 square backwards.

The _____ has moved ____
squares forwards.



3



Record these movements on the grid using arrows.

The turtle moves 1 square right.

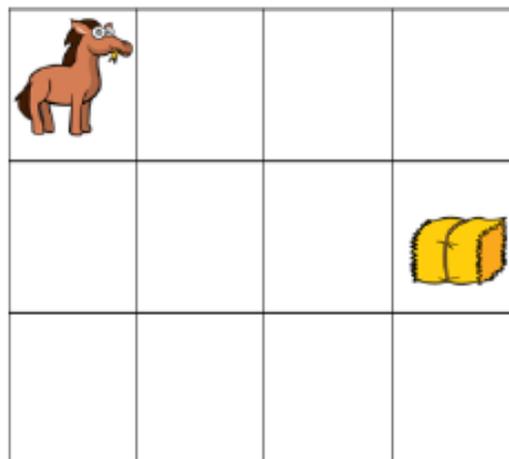
The bee moves 3 squares left.

The bird moves 1 square backwards.

The sheep moves 1 square forwards.

How many different routes can you write for the horse to get to the hay?

Use the words forwards, backwards, left and right.



Complete the worksheet about Describing

Movement. N.B. I have included the sheet with the answers too, as I think some of the questions might be a little confusing! The final question in particular! I think they want you to use 'forwards and backwards' instead of 'up and down'. However, in the first question, they do use 'up and down'!!!! For this reason, I would PERSONALLY suggest that both Whitney and Tommy are right!

Extra Activities for Children Working at Greater Depth

Draw your own grid of squares and another one exactly the same for your partner. Place a large book (or something similar) between you so that you cannot see the other person's grid. Place some small pictures of animals, people, vehicles (or whatever you want) on your grid. Move your animals / people / vehicles around on your grid and give your partner instructions as you do so, so that they can move their animals / people / vehicles in exactly the same way. Make sure your partner isn't looking! After a series of instructions, look to see if your grids match. If not, why not? Were any of your instructions unclear?

Activity 4

*Position
and
Direction*

Objective: Describing Turns.

Notes and Guidance

Children continue to use language 'forwards', 'backwards', 'up', 'down', 'left' and 'right' to describe movement in a straight line.

Children write directions for given routes and record routes on 2D grids. It is important to encourage the children to take into consideration which direction the object is facing to begin with. Teachers should discuss the difference between a turn and moving with the children.

Mathematical Talk

What is each turn called?
What direction was the turn in?

Can we end up facing the same direction if we started facing different directions?

How far has the shape turned?
What does the shape look like after a turn?

Activities

Describe how the triangle has turned each time.



The triangle has made a _____ turn _____.



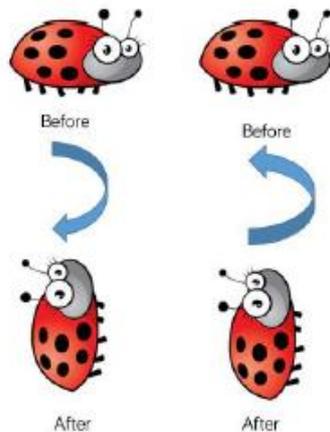
The triangle has made a _____ turn _____.



The triangle has made a _____ turn _____.

N.B. You might want to cut out a triangle and show your child how you are physically turning it around (rotating it).

Explain what is the same and what is different about the turns made by the ladybirds.

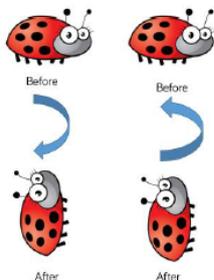


Always, Sometimes, Never

If two objects turn in different directions they will not be facing the same way.

N.B. Answers below!

Explain what is the same and what is different about the turns made by the ladybirds.



Both ladybirds started facing the same way and have finished facing the same direction. The first ladybird turned three quarters clockwise. The second ladybird turned a quarter anti-clockwise.

Always, Sometimes, Never

If two objects turn in different directions they will not be facing the same way.

Sometimes. It depends on how far the objects are turned – quarter, half, three quarters or full.

Have a go at this 'Turning Man' Activity;

<https://nrich.maths.org/5560>

Complete the worksheet about Describing Turns. (Again, the answers are provided for you).

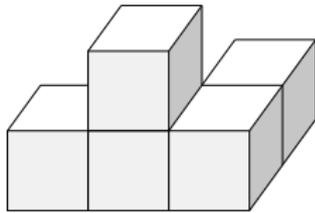
Extra Activities for Children Working at Greater Depth

OK, so this activity says it is for 11 to 14 year olds! But I'm sure that some of our 'sparky' children could figure it out! Perhaps you could try building the shape in some way first?

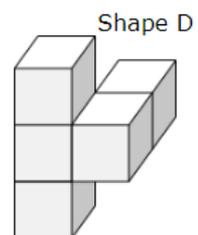
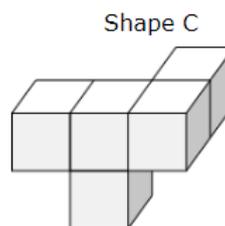
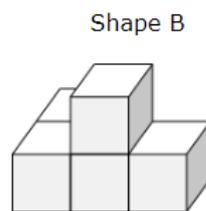
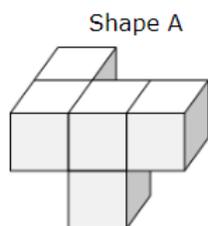
Rotation Identification

Age 11 to 14 Short ★

Look at this shape made from 5 cubes.



Which of the shapes below can be obtained by rotating it?



Activity 5

Objective: Describing Movement and Turns.

*Position
and
Direction*

Notes and Guidance

Children use their knowledge of movement and turns to describe and record directions.

Children need to be aware of the directions the objects are facing at various times in order to complete turns correctly and turn in the right direction.

Mathematical Talk

Which direction is ____ facing to begin with? Why is this important?

Is ____ moving or just changing direction? How do you know?

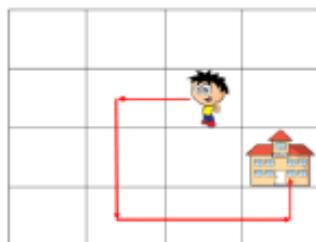
How can we record the directions given?

How can we show the difference between a turn and moving?

Is there a more efficient route to take?

Activities

- 1 Fill in the blanks to describe the route Dennis takes to school.



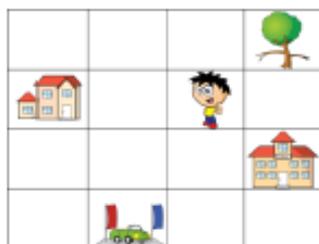
Walk ____ 1 square. Turn a ____
turn left. Walk forwards ____
squares. Turn ____, Walk ____ 2
squares. Turn a ____ turn ____.
Walk ____.

- 2 Draw the route to show these directions.



Forward 1 square. Turn left.
Forward 1 square, Make a quarter
turn anti-clockwise. Forward 1
square. Make a quarter turn
clockwise. Forward 1 square. Make
a three quarter turn anti-clockwise.
Forward 3.

- 3 Write directions for Dennis to get to each place on the map.

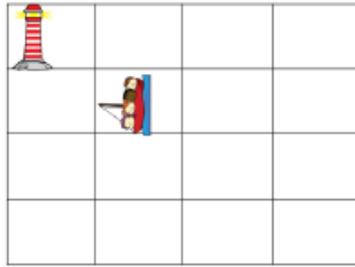


How many different routes can you
find to get from start to finish.

Use the words 'forwards', 'backwards',
'left', 'right', 'clockwise' and 'anti-
clockwise'.

			Finish
	Start		

The boat is sailing to the lighthouse.



The boat needs to turn a quarter clockwise first.



Oliver

The boat needs to turn left first.

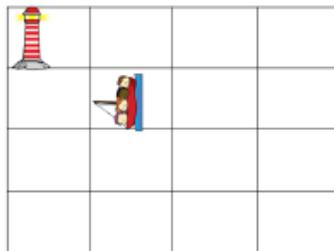


Shama

Who is correct?
Explain how you know.

N.B. Answer below.

The boat is sailing to the lighthouse.



The boat needs to turn a quarter clockwise first.



Oliver

The boat needs to turn left first.



Shama

Who is correct?
Explain how you know.

Both children could be correct. Shama does not state how far the boat should turn. Half a turn left would be as efficient as Oliver's quarter turn clockwise.

Complete the worksheet about Describing Movement and Turns (answers provided).

N.B.

This week I have included the White Rose End of Block Assessment because we have now finished learning about Shape. I have also included the Assessment for Position and Direction. You may wish to give these to your child at the end of the week to check their understanding.

Don't forget.....

If you Google 'I See Maths Videos', the top result that comes up is 'All Home Lessons - I See Maths'.

This website has videos for learning maths at home. They teach you how to play little maths games with different levels of challenge. They cover different topics like Money, Addition and Subtraction and Multiples. They have a few printable resources to support the games too. I have watched a couple of the videos and can recommend them. 😊